**Raster vs. Vector GIS, Grids, TINs, DEMs, Schematic Modeling**

**Vector vs. Raster Model**

**VECTOR MODEL: uses points, lines, polygons**

Examples of vector data: DLGs (digital line graphs), Tiger files (U.S. roads w/ a wide variety of associated census data)

**Advantages of vector data:**

- Requires less disk storage
- Topology easy to maintain
- Graphical maps more closely represent hand-drawn

**Disadvantages of vector data:**

- More complex data structure than raster data
- Not as compatible with remote sensing as raster data
- Overlay analysis more time-consuming than raster data
RASTER MODEL: uses imagery, photos, grids

Examples of raster data: DRGs, Remotely sensed data (imagery); DOQs (photos); DEMs (grids)

Advantages of raster data:

- Simple data structure
- Compatible w/ remote sensing
- Simple spatial analysis
- High spatial variability available

Disadvantages of raster data:

- Requires more storage space than vector data
- Boundaries has more blocky appearance than vector data
- Projection transformations are more difficult than vector data
- More difficult to represent topology than with vector data
GRIDS: a type of raster data having regularly spaced cells with values assigned to unique row and column locations

Examples of data that can be represented in a grid include: elevation, pollution concentrations in air or water, noise levels, incoming solar radiation

Types of operations performed on vectors vs. grids:

Examples of vector operations: Buffer, union, intersect, dissolve, merge, clip

Examples of grid operations:

Creating surfaces

- Interpolate a grid (creates a continuous surface from sampled input point values)
- Derive slope and aspect
- Create a TIN (requires Arc View’s 3D Analyst extension)

Analyzing surfaces

- Find distance
- Summarize zones
- Reclassify (can convert continuous or floating point data to integer data)
- Calculate density